

CLAIMS

What is claimed is:

1. A securement device, comprising:

a knob portion, wherein the exterior of the knob portion includes a plurality of knob lobes having a frictional surface for accommodating an operator's hand that permits hand-tightening of the securement device, wherein the knob portion further includes:

a plurality of ribs located in its interior structure, wherein each rib is defined by an angle; and

an actuator portion, including:

at least a plurality of deflection tabs extending from a base portion on a vertical cylinder portion radially distanced from a nut sub-assembly, wherein each tab is defined by an angle dimensionally similar to the angle of the each rib, wherein the securement device incorporates a torque control feature that produces an audible clicking noise when a specific torque has been achieved during hand tightening of the knob portion about the actuator portion.
2. The securement device of claim 1, wherein the securement device is applied in a closed vehicle application.
3. The securement device of claim 2, wherein the closed vehicle application is a roof-rack application.
4. The securement device of claim 2, wherein the closed vehicle application is a vehicle interior in the cargo area.
5. The securement device of claim 1, wherein the securement device is applied in an open vehicle application.
6. The securement device of claim 5, wherein the open vehicle application is a bed of a pick-up truck.

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7. The securement device of claim 1 further including radial ribs extending radially from a hub portion of the nut sub-assembly to the base portion that connects to each tab.

8. The securement device of claim 1, wherein the torque control feature is the positioning of the deflection tabs on the vertical cylindrical portion causes deflection and torque-induced forces to oppose one another in a radial direction in order to prevent the knob portion and actuator portion from being forced apart.

9. The securement device of claim 1, wherein the torque control feature is further defined by a resultant force generated by the deflection of the deflection tabs and ribs produces torque through the nut sub-assembly until the resultant force exceeds the tab deflection force.

10. The securement device of claim 1, wherein the nut sub-assembly engages a threaded stud and cleat assembly.

11. The securement device of claim 1 further including securing portions for securing the knob portion to the actuator portion so that upon rotating the knob portion, the nut sub-assembly may torque down onto a shaft.

12. The securement device of claim 1, wherein the securement device includes 55-60% by weight glass-filled nylon.

13. The securement device of claim 12, wherein at least the deflection tabs of the actuator portion further includes an Acetal material defined to have a high-lubricity surface so that the actuator portion operates as a lubricated part

14. The securement device of claim 1, wherein each tab provides approximately 9.8 pounds of deflection force.

15. The securement device of claim 1, wherein the angle of the ribs and deflection tabs produces at least 40-45 inch-pounds of torque.

16. A securement device, comprising:

a knob portion, wherein the exterior of the knob portion includes a plurality of knob lobes having a frictional surface for accommodating an operator's hand that permits hand-tightening of the securement device, wherein the knob portion further includes:

a plurality of ribs located in its interior structure, wherein each rib is defined by an angle; and

an actuator portion, including:

at least a plurality of deflection tabs, each providing approximately 9.8 pounds of deflection force, extending from a base portion on a vertical cylinder portion radially distanced from a nut sub-assembly engaging a threaded stud and cleat assembly, wherein each tab is defined by an angle dimensionally similar to the angle of the each rib, wherein the angle of the ribs and deflection tabs produces at least 40-45 inch-pounds of torque, wherein the securement device incorporates a torque control feature that produces an audible clicking noise when a specific torque has been achieved during hand tightening of the knob portion about the actuator portion, wherein the torque control feature is the positioning of the deflection tabs on the vertical cylindrical portion causes deflection and torque-induced forces to oppose one another in a radial direction in order to prevent the knob portion and actuator portion from being forced apart, wherein the torque control feature is further defined by a resultant force generated by the deflection of the deflection tabs and ribs produces torque through the nut sub-assembly until the resultant force exceeds the tab deflection force.

17. The securement device of claim 16 further including securing portions for securing the knob portion to the actuator portion so that upon rotating the knob portion, the nut sub-assembly may torque down onto a shaft.

18. The securement device of claim 16, wherein the securement device includes 55-60% by weight glass-filled nylon.

19. The securement device of claim 18, wherein at least the deflection tabs of the actuator portion further includes an Acetal material defined to have a high-lubricity surface so that the actuator portion operates as a lubricated part

20. A securement device, comprising:

a knob portion, wherein the exterior of the knob portion includes a plurality of knob lobes having a frictional surface for accommodating an operator's hand that permits hand-tightening of the securement device, wherein the knob portion further includes:

a plurality of ribs located in its interior structure, wherein each rib is defined by an angle;

an actuator portion, including:

at least a plurality of deflection tabs, each providing approximately 9.8 pounds of deflection force, extending from a base portion on a vertical cylinder portion radially distanced from a nut sub-assembly engaging a threaded stud and cleat assembly, wherein each tab is defined by an angle dimensionally similar to the angle of the each rib, wherein the angle of the ribs and deflection tabs produces at least 40-45 inch-pounds of torque, wherein the securement device incorporates a torque control feature that produces an audible clicking noise when a specific torque has been achieved during hand tightening of the knob portion about the actuator portion, wherein the torque control feature is the positioning of the deflection tabs on the vertical cylindrical portion causes deflection and torque-induced forces to oppose one another in a radial direction in order to prevent the knob portion and actuator portion from being forced apart, wherein the torque control feature is further defined by a resultant force generated by the deflection of the deflection tabs and ribs produces torque through the nut sub-assembly until the resultant force exceeds the tab deflection force; and

radial ribs extending radially from a hub portion of the nut sub-assembly to the base portion that connects to each tab.

21. The securement device of claim 20 further including securing portions for securing the knob portion to the actuator portion so that upon rotating the knob portion, the nut sub-assembly may torque down onto a shaft.

22. The securement device of claim 20, wherein the securement device includes 55-60% by weight glass-filled nylon.

23. The securement device of claim 22, wherein at least the deflection tabs of the actuator portion further includes an Acetal material defined to have a high-lubricity surface so that the actuator portion operates as a lubricated part

24. A securement device comprising:

means for gripping, wherein the means for gripping is a knob portion, wherein the exterior of the knob portion includes a plurality of knob lobes having a frictional surface for accommodating an operator's hand that permits hand-tightening of the securement device, wherein the knob portion further includes a plurality of ribs located in its interior structure, wherein each rib is defined by an angle; and

means for torquing, wherein the means for torquing is an actuator portion, wherein the actuator portion includes at least a plurality of deflection tabs extending from a base portion on a vertical cylinder portion radially distanced from a nut sub-assembly, wherein each tab is defined by an angle dimensionally similar to the angle of the each rib, wherein the securement device incorporates a torque control feature that produces an audible clicking noise when a specific torque has been achieved during hand tightening of the knob portion about the actuator portion.